Implementing the Storm Water Pollution Prevention Plan (SWPPP) for Shallow Drilling Operations

2013 North Dakota Water and Pollution Control Conference
North Dakota Department of Health
Ramada Doublewood, Bismarck ND
March 26, 2013
Dwayne Stenlund, MSc, CPESC
Resource Professionals Alliance

Drilling Operations

- Slope anchors
- Utility horizontal drilling
- Horizontal pipe drilling
- Geothermal well drilling
- Bridge drill shafts
- Oil and natural gas fracking

Common SWPPP items

- Preplanning
- Action Planning
- Amending
- Quality control

- Site access/road building
- Perimeter defenses
- Temporary soil stabilization
- Drainage routing/diversions
- Pad drainage treatment
- Chemical management
- Chemical containment
- Chemical treatment
- Spill management
- Dust control
- Good housekeeping
- Disposal
- Final restoration

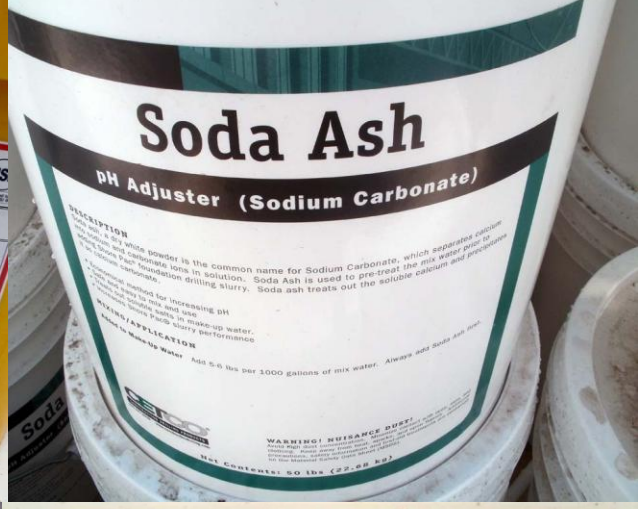
Common Drill Chemicals

- Sediments
- Grouts, cementitious agents
- Dispersants
- Surfactants
- Friction reducing agents
- Biocides
- Scale inhibitors
- pH control agents
- Gel breakers
- Clay control agents
- Anti-flocculating agents
- HCl acids
- Diesel fuels (benzene, toluene, xylene)
- Formaldehyde
- Polymers, PAM
- Heavy metal (Cr, As, Ni) cross linkers
- Secret/proprietary agents

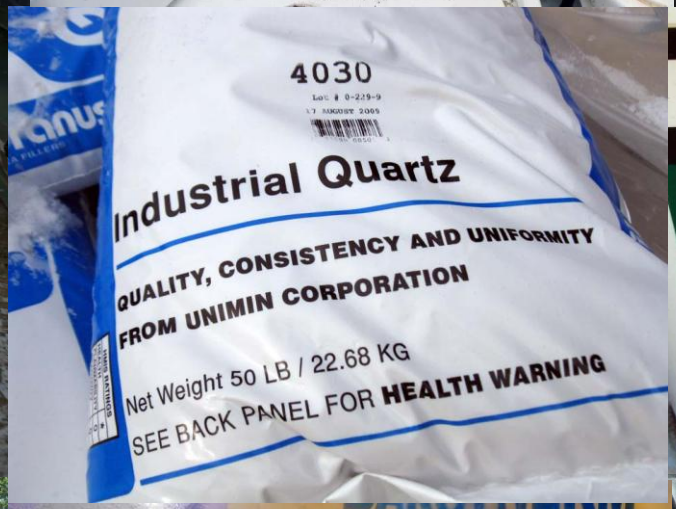
- MSDS
- Slurry basins, dumpsters, barges
- Secondary containment
- Covers
- Lockout
- Spill containment
- Spill absorption
- Neutralization
- Flocculation
- Mud digesters


CAUTION
BENSEAL®
UNIFORM GRANULAR
WYOMING SODIUM BENTONITE
GROUTING BENTONITE
DESIGNED FOR:
PLUGGING & ABANDONMENT OF BOREHOLES
DEVELOPMENT OF LOW PERMEABLE ANNULAR SEALS
GROUTING OF GROUND SOURCE HEAT LOOPS
ENHANCED STRUCTURAL INTEGRITY
SEALING OF PONDS AND EARTHEN STRUCTURES
NET WEIGHT
50 POUNDS/22.68 KILOS


NO-SAG®
Suspension Enhancer
QUIK MUD® GOLD
Clay/Shale Stabilizer
HALLIBURTON


Soda Ash
pH Adjuster (Sodium Carbonate)


QUIK-GEL®


4030
Industrial Quartz
QUALITY, CONSISTENCY AND UNIFORMITY
FROM UNIMIN CORPORATION
Net Weight 50 LB / 22.68 KG
SEE BACK PANEL FOR HEALTH WARNING


Sand Sealant/Multi-Seal™
Slurry Fluid Loss Blend
DESCRIPTION
CHARACTERISTICS
MIXING/APPLICATION
EQUIPMENT NEEDED
CETCO
Net Contents: 50 lbs (22.68 kg)


BORE-GEL®
BORE-GEL®
BORE-GEL®


BAROTHERM® GOLD
BAROTHERM® GOLD


Slurry Buster™ Dry
Dry Granular Slurry Breaker
DESCRIPTION
ADVANTAGES
MIXING/APPLICATION
CETCO
Net Contents: 15 lbs (6.4 kg)

MSDS Documents

1. CHEMICAL PRODUCT AND COMPANY INDENTIFICATIO

PRODUCT NAME : **Super Mud**
SYNONYMS : Anionic polyacrylamide in water-in
CHEMICAL FAMILY : Anionic Polyacrylamide Copolymer
MOLECULAR FORMULA : Mixture
MOLECULAR WEIGHT : Mixture

PDSCo, P.O. BOX 507, WEST SHARP STREET, EL DORADO, A
EMERGENCY PHONE: For emergency call PDSCo: 1 (800) 243-

UNIMIN CORPORATION
258 Elm Street
New Canaan, CT 06840

PRODUCT NAME: Crystalline Silica in the form of Quartz – various grades

SYNONYMS: Quartz, Crystalline Silica, Silicon Dioxide

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

BAROTHERM® GOLD
None
Mineral
Grouting Material

Baroid Fluid Services
a Product Service Line of Halliburton Energy Services,
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (281) 575-5

TRADE NAME:	SODA ASH
CHEMICAL CLASS:	Sodium carbonate
APPLICATIONS:	Oil well drilling fluid additive. Calcium precipitation
EMERGENCY TELEPHONE:	281-561-1600
SUPPLIER:	Supplied by a Business Unit of M-I L.L.C. P.O. Box 42842, Houston, Texas 77242-2842

QUIK-GROUT® single-sack, easy-to-use, sodium-based bentonite grout designed for grouting water wells, monitoring wells, and for plugging holes. QUIK-GROUT bentonite does not contain any polymers.

Product Trade Name:	QUIK-GEL®
Synonyms:	None
Chemical Family:	Mineral
Application:	Viscosifier
Manufacturer/Supplier	Baroid Fluid Services Product Service Line of Halliburton P.O. Box 1675 Houston, TX 77251

n seal or grout plastic and steel casings
n seal downhole instrumentation in test and observation holes
n plug abandoned boreholes and earthen cavities

te: Not recommended for use as a cement additive

CAUTION! - ACUTE HEALTH HAZARD
May cause eye and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD
Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer

3. COMPOSITION and INFORMATION ON INGREDIENTS

SYNONYMS: M-I Gel Supreme Wyoming,

INGREDIENT	CAS-NO	CONTENTS
Bentonite	1302-78-9	80-95%
Silica, crystalline, quartz	14808-60-7	2-15%
Gypsum (Calcium sulfate)	13397-24-5 7778-18-9	0-1%
Silica, crystalline, tridymite	15468-32-3	0-1%

PRODUCT NAME
Halliburton/Baroid Poly-Bore

SYNONYMS
"bore-hole drilling stabilising fluid", "Poly-Boar Poly-Baw (misspelling)", "Baroid Poly-Bore"

PRODUCT USE
Additive.

SUPPLIER
Company: Halliburton Halliburton Australia Pty Ltd

Know the use and limitations

Slurry Buster™ Dry

Shore Pac® Polymer Slurry Breaker

Description: Slurry Buster™ Dry is an industrial grade oxidizing agent used to breakdown Shore Pac® polymer slurry. This white granular solid dissolves completely in Shore Pac slurry. The active ingredient is a powerful class III oxidizer that ensures rapid and complete slurry degradation. Slurry Buster Dry is supplied in plastic re-sealable pails. Slurry Buster Dry is a highly effective clean-up solution.

Recommended Use: Slurry Buster Dry mixes rapidly into the drilling slurry and breaks the polymer backbone through an oxidation reaction. After treatment with Slurry Buster Dry all that remains is water; ready for convenient disposal. Slurry Buster Dry is designed to be added at the tank or waste pit but never to the excavation.

Common BMP Tools

- Basins, traps, dumpsters, barges
- Material lock-out
- Geotextiles
- Poly sheeting
- Pumps
- Topsoil berms
- Qualified inspectors/brain
- Wheel washoff/ grizzley/ slash mulch
- Garbage containers

Materials On Hand

- Mulches (weed free)
- Wood fiber wattles (biblogs
- Natural net blankets
- Geotextiles
- Plastic

Building what's next.

Mortenson construction

SAFETY AREA REQUIREMENTS

- 100% Hard Hats
- 100% Eye Protection
- 100% Warm-up Stretching
- 100% Fall Protection
- 100% Hard Sole Work Shoes with Protective Toes
- 100% Class II/III Vests
- 100% Hand Protection

SHORTS, SLEEVELESS SHIRTS,
ATHLETIC SHOES ARE NOT PERMITTED

www.mortenson.com

Material Lock-up/out

- Prevent accidental spills
- Prevent vandalism

Spill Recovery BMPs

Spill Prevention BMPs

Dewatering BMPs

Work Area Access Mats

Storm Water Discharge Permit

NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM

HIGH-VOLUME HYDRAULIC FRACTURING

GP-0-XX-00X

Issued pursuant to Article 17, Titles 7 and 8, and Article 70 of the Environmental Conservation Law

Effective Date:_____ Expiration Date:_____

Implementing the SWPP_Plan

PART III. DEVELOPMENT AND ADMINISTRATION OF THE CONSTRUCTION SWPPP

A. Development of the Construction SWPPP

1. The *Construction SWPPP* shall be prepared and provide for compliance with the terms of this general permit on or before the date of submission of an NOI to be covered under this general permit.

2. The *Construction SWPPP* must be part of the Comprehensive *SWPPP*. Additional coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity is not needed.

3. Stormwater runoff from all land disturbances associated with *well site*, including the construction of *access roads*, *well pads*, pipelines, staff accommodations, impoundments and equipment *storage* areas must be addressed in the *Construction SWPPP*.

4. A *Qualified Professional* that is knowledgeable in the principles and practices of stormwater management and treatment must prepare the *Construction SWPPP*

D. Amendments to the SWPPP

1. The *owner or operator* must keep the *Construction SWPPP* current so that it at all times accurately documents the erosion and sediment control practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the *well site*.


CONCRETE
WASH

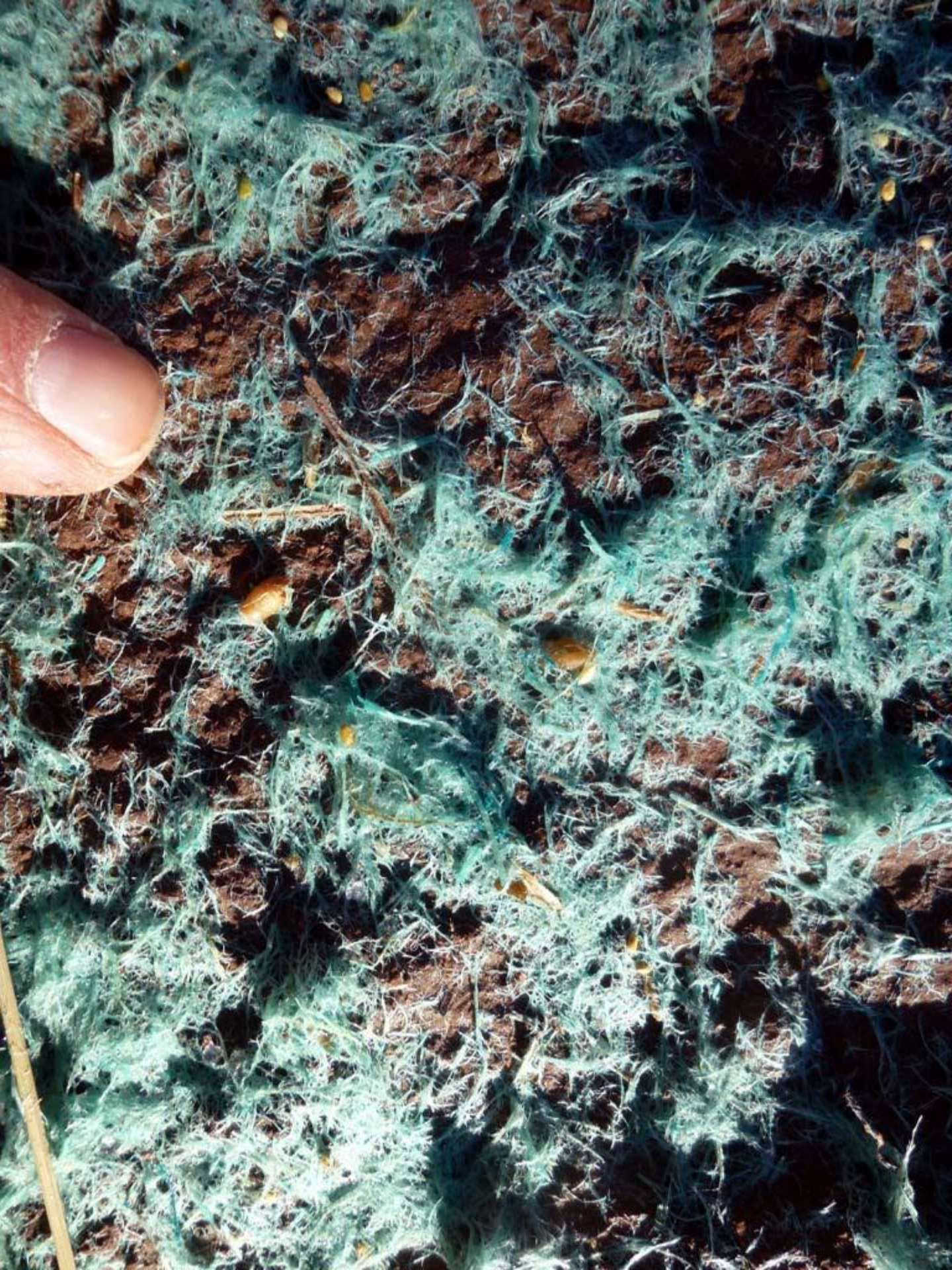
Slope Stabilization System

- Drilled and grouted anchors
- Galvanized fence mat
- Cellular confinement mat, soil filled
- Specialty native seed mixture
- Coconut blanket
- Temporary irrigation

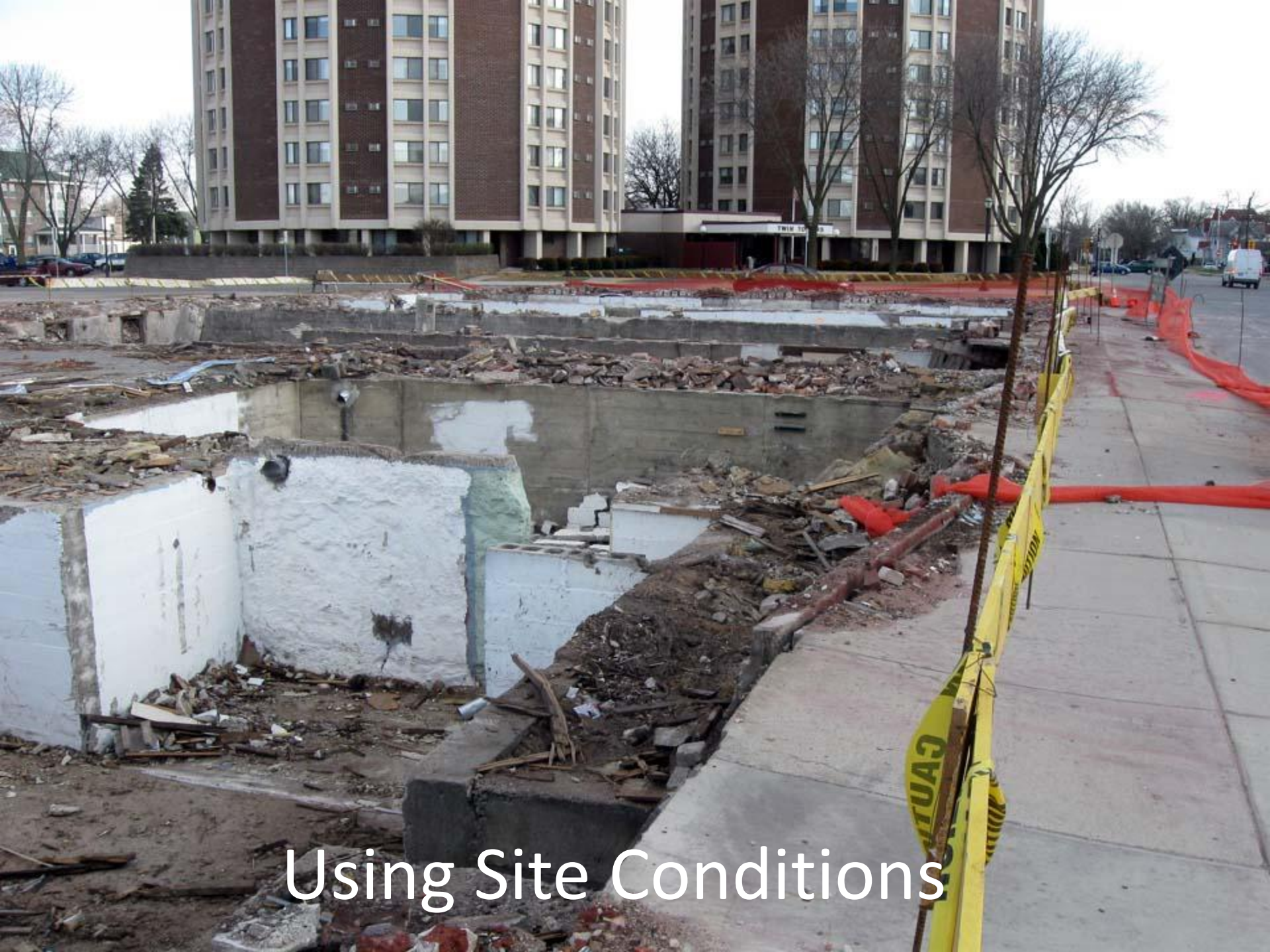

Soil Anchor Drill & Grout


HITACHI
HITACHI


ZIEGLER RENTAL
800AJ



Geothermal Drilling


Using Site Conditions

EROSION CONTROL PLAN

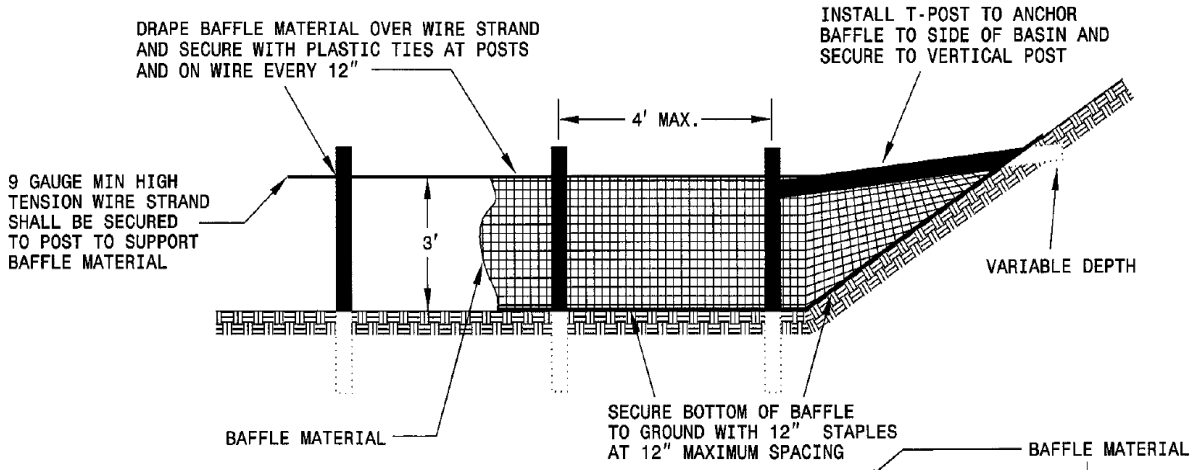
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

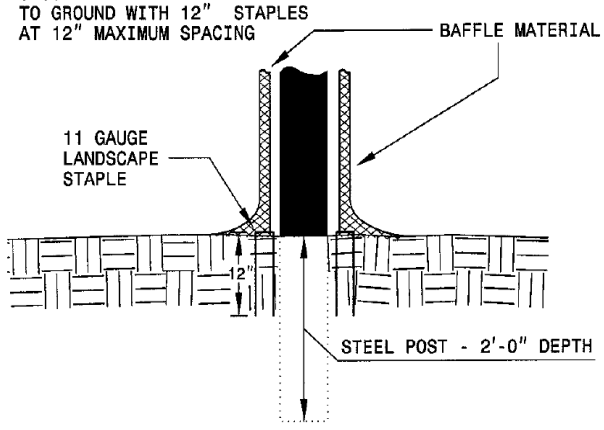
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

COIR FIBER BAFFLE DETAIL





BAFFLE MATERIAL SHALL BE SECURED TO THE BOTTOM AND SIDES OF BASIN USING 12" LANDSCAPE STAPLES

NOTES:

1. INSTALL THREE(3) COIR FIBER BAFFLES IN SILT BASINS AND SEDIMENT DAMS AT DRAINAGE OUTLETS WITH A SPACING OF ¼ THE BASIN LENGTH.

2. TWO(2) COIR FIBER BAFFLES CAN BE INSTALLED IN SILT BASINS AND DAMS LESS THAN 20 FT. IN LENGTH WITH A SPACING OF 1/3 THE BASIN LENGTH.

3. TOP HEIGHT OF COIR FIBER BAFFLES SHALL NOT BE BELOW BASE OF EMERGENCY SPILLWAY ELEVATION.

WBS NO. 42818.3.1
ROWAN COUNTY
STATION: 13+18.50 -L-
REPLACES BRIDGE NO. 95 SHEET 5 OF 5

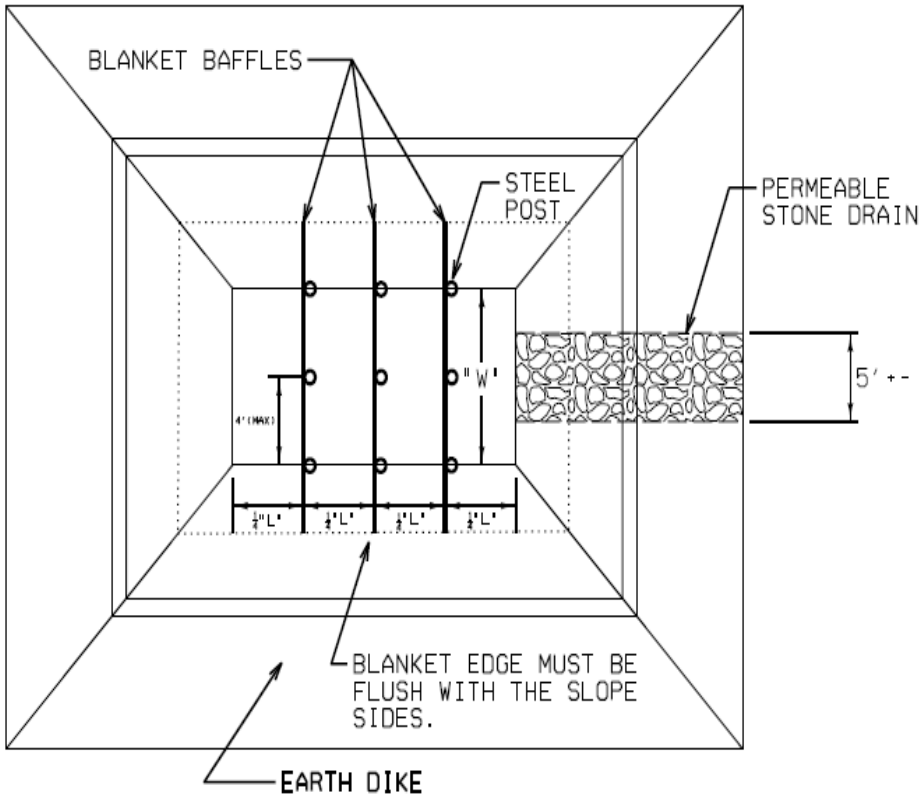
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL PLAN

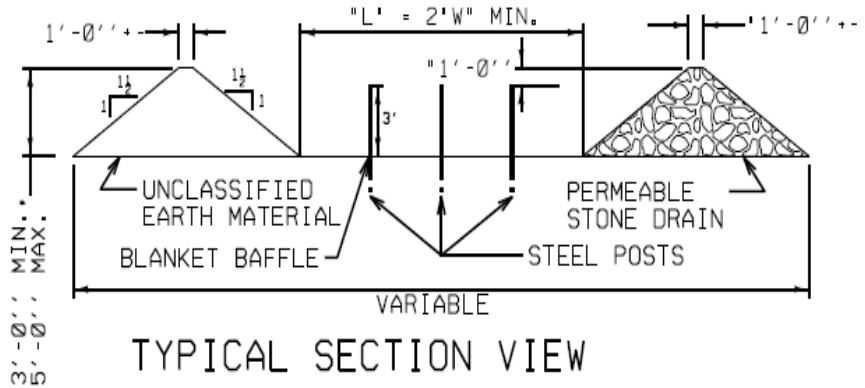
30' CLEAR ROADWAY - 60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	29
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : R. SEALEY DATE : 3/09
CHECKED BY : M. AVERETTE DATE : 3/09



PLAN



TYPICAL SECTION VIEW

GENERAL NOTES:

CONSTRUCT THE CATEGORY 4 WOOD FIBER OR CATEGORY 5 COIR FIBER BAFFLES WITH A MATERIAL THAT MEETS THE SPECIFICATION OF 3885 BLANKET.

PROVIDE 5' STEEL POSTS AS PER 3886-1. INSTALL STEEL POSTS WITH NO MORE THAN 3' OF THE POST APPEARING ABOVE THE GROUND.

ATTACH THE BLANKET BAFFLE TO THE STEEL POSTS WITH ZIPTIES CONFORMING TO 3886-D1 OR OTHER ACCEPTABLE MEANS AND STAPLE INTO THE BOTTOM AND SIDE SLOPES OF THE STILLING BASIN WITH 6'' STAPLES.

INSTALL THE TOP OF THE BLANKET BAFFLE A MINIMUM 6'' LOWER THAN THE TOP OF THE STILLING BASIN BERMS.

USE THE TYPICAL SECTION SHOWN FOR THE STILLING BASIN AS A GUIDE. THE BASIN MAY HAVE ANY TYPE CONFIGURATION AS LONG AS SUFFICIENT VOLUME IS PROVIDED AND PROVISIONS ARE MADE FOR A PERMEABLE STONE DRAIN CONSISTING OF AGGREGATE BACKFILL OF 3149.2E OR OTHER ACCEPTABLE SIZE TO ALLOW DRAINAGE WITHIN 72 HOURS.

DO NOT EXCEED 5' IN HEIGHT FOR THE EARTH DIKES REQUIRED FOR STILLING BASINS. ADDITIONAL DEPTHS MAY BE ATTAINED BY EXCAVATING BELOW THE NATURAL GROUND LEVEL.

THE STILLING BASIN SIZE IS VARIABLE AND DEPENDENT ON SPECIFIC SITE REQUIREMENTS AS WELL AS PROPOSED CONSTRICTION OPERATIONS.

SUBMIT THE SIZE, LOCATION, AND PERMEABLE STONE DRAIN MATERIAL FOR APPROVAL PRIOR TO OPERATIONS.

PUMP THE EFFLUENT INTO THE STILLING BASIN TO A MAXIMUM DEPTH OF 3'.

STANDARD SHEET NO. X-XXX.XXX	TITLE: TURBIDITY REDUCTION
STANDARD APPROVED: MONTH 30, YEAR	BLANKET BAFFLE SYSTEM
REVISION DATE: 12/30/2010	STATE PROJECT NO. - SHEET OF SHEETS


QUIK-GEL


Need slurry management


Prevention of storm water exposure

Need better trackout practices

- Wheel washoff

Winter Work


"INTERPUMP"
GROUND ROD
GROUTER
10622

Sand control dikes

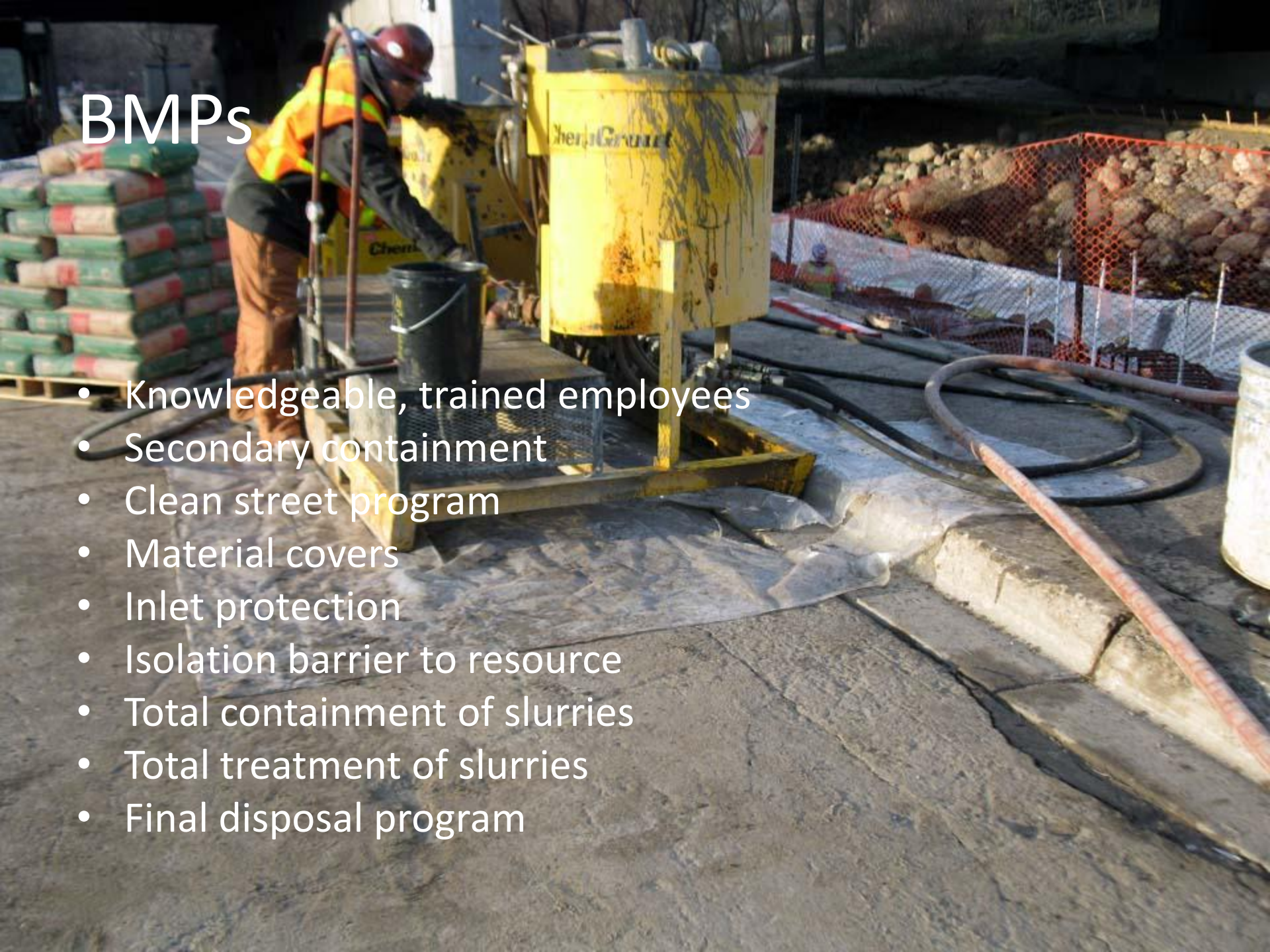
Temporary slurry traps

Surface removals, in a timely manner

Directed runoff


By spring, should not know that there was any geothermal well drilling

Drilled Caisson Shaft



BMPs

- Knowledgeable, trained employees
- Secondary containment
- Clean street program
- Material covers
- Inlet protection
- Isolation barrier to resource
- Total containment of slurries
- Total treatment of slurries
- Final disposal program


JOHN DEERE


MAGNUM
35
MAGNUM


54710
260234
800-742-7

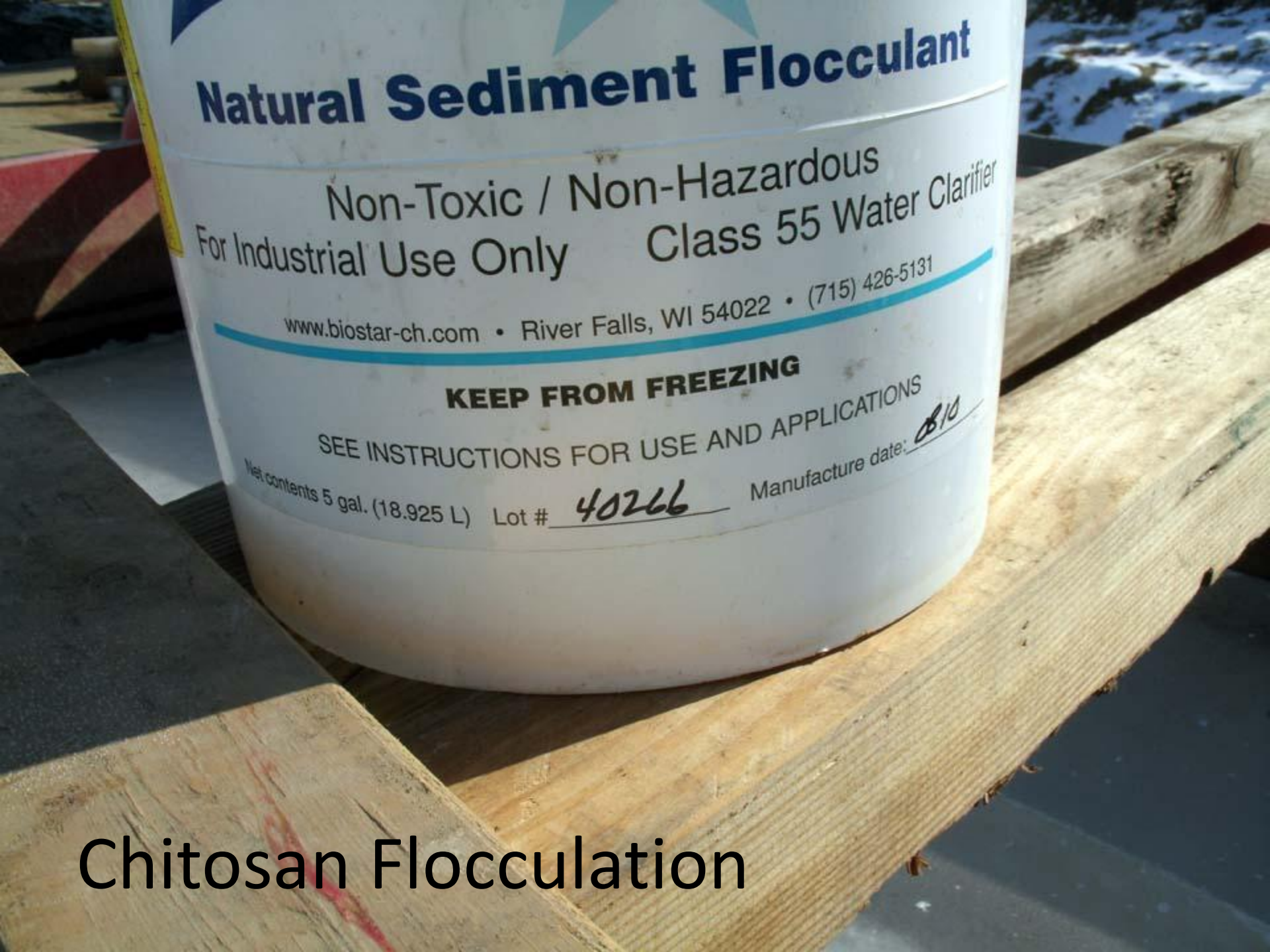

JLG LIFT

Air-lifting slurries

Treatment and Monitoring

- Oil film removal
- pH adjustment
- Slurry flocculation


CO2 Sparging
CARBON DIOXIDE
UN1013
NON-FLAMMABLE GAS
2
Airgas
www.airgas.com
Airgas



Chitosan Flocculation


CAUTION
INLET
CAUTION

Surface skimming of treated water


Directional Boring
006
DEERE


OUR GOAL IS YOUR HOLE
006
Peterbilt
Dr.BORE


Bore-Gel


AQUATECH
AQUATECH


OUR GOAL IS YOUR HOLE
TERRELL
INC.
Sulphur Texas
1-319-846-2088
OVERSIZE LOAD


TERRELL INC.
TERRELL
INC.
TAKEUCHI


TERRELL
319·846·2088


WingStreet

Soil Repair: Compost


Natural netted blankets

Drilled Shaft and Pile Testing

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR DRILLED SHAFT AND PILE TEST PROGRAM

LOCATED ON T.H. 36, IN THE ST. CROIX RIVER, SOUTH OF STILLWATER

STATE PROJ. NO. 8217-18

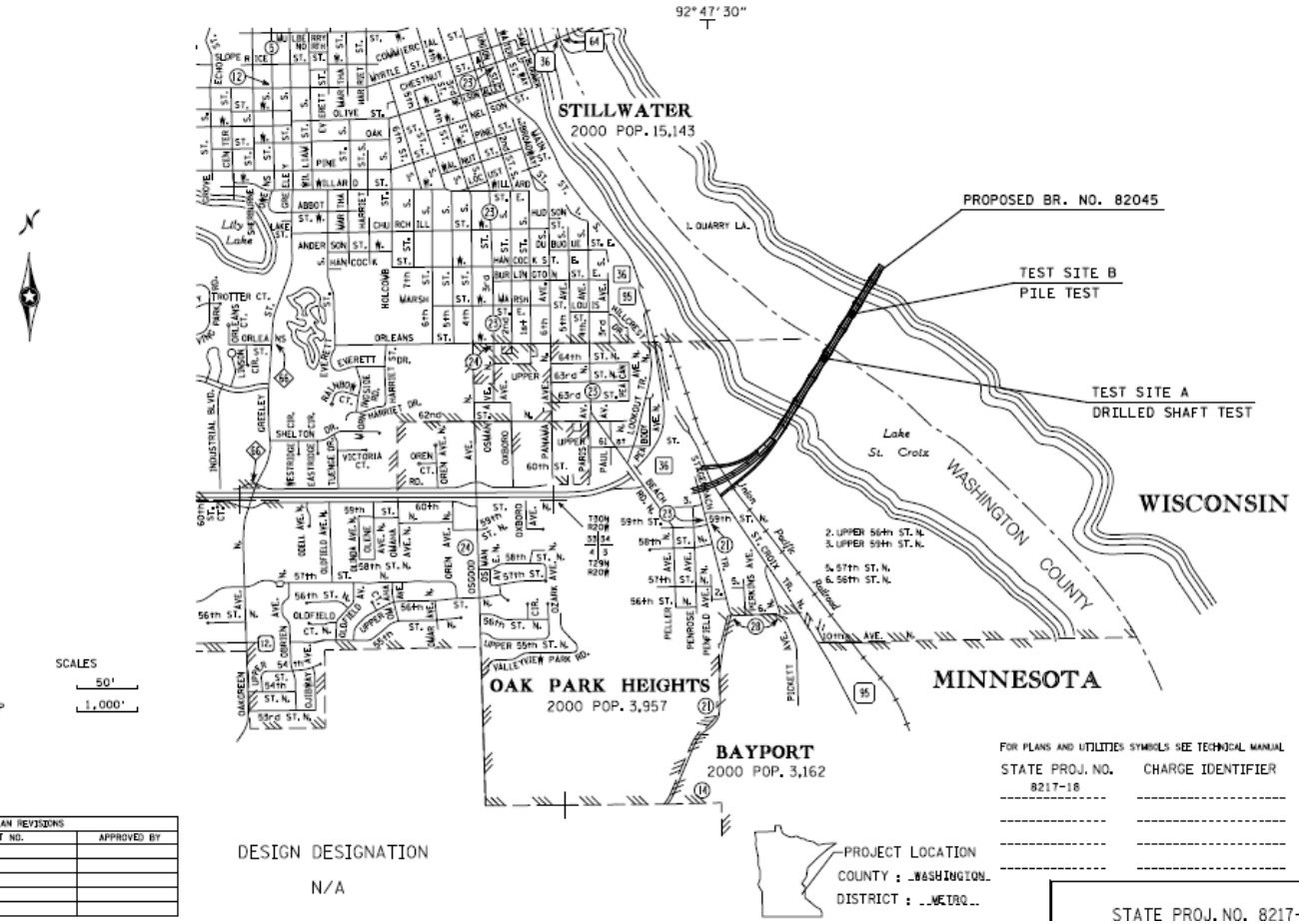
FED. PROJ. NO. STATE FUNDS

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", SHALL GOVERN.

INDEX

THIS PLAN CONTAINS 10 SHEETS



SCALES

PLAN 50'

INDEX MAP 1,000'

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: DANILO (DJ) SOSA JR. LICENSE # 49048

DATE: SIGNATURE:

DESIGN SQUAD DANILO (DJ) SOSA JR.

RECOMMENDED FOR APPROVAL _____ 20____
DISTRICT TRANSPORTATION ENGINEER

RECOMMENDED FOR APPROVAL _____ 20____
STATE FOUNDATIONS ENGINEER

RECOMMENDED FOR APPROVAL _____ 20____
DISTRICT WATER RESOURCES/HYDRAULICS ENGINEER

RECOMMENDED FOR APPROVAL _____ 20____
STATE PRE-LETTING ENGINEER

OFFICE OF LAND MANAGEMENT APPROVAL _____ 20____
DIRECTOR, LAND MANAGEMENT

APPROVED _____ 20____
STATE DESIGN ENGINEER

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: LICENSE #

DATE: SIGNATURE:

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

DESIGN DESIGNATION

N/A

PROJECT LOCATION

COUNTY : WASHINGTON

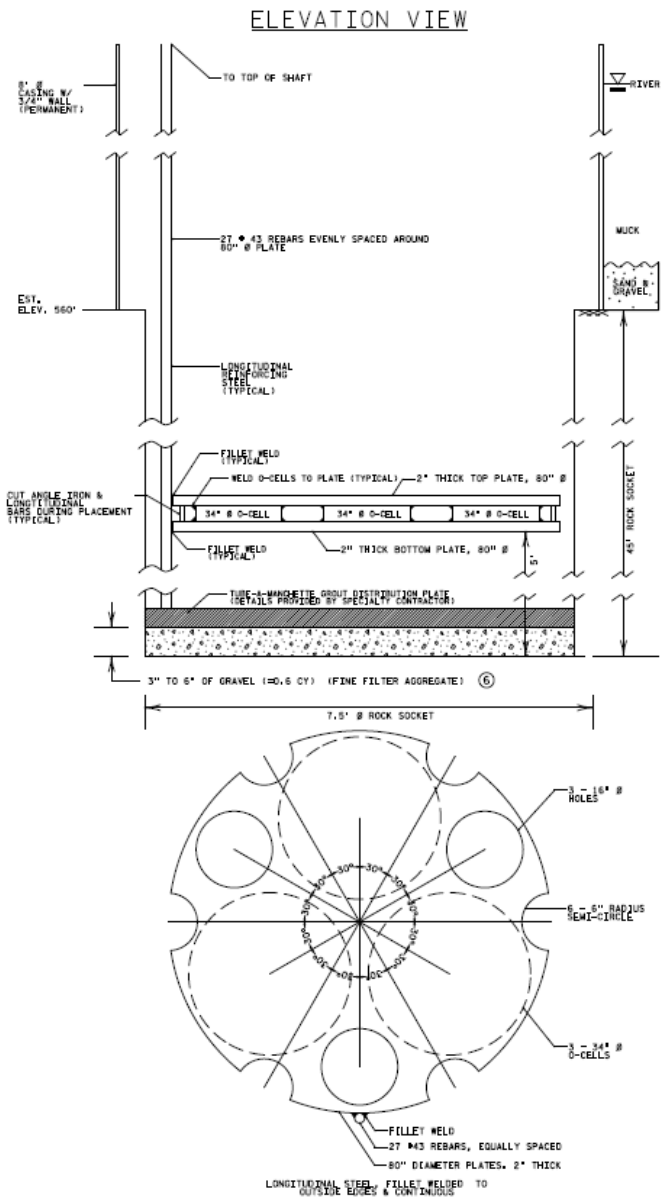
DISTRICT : METRO

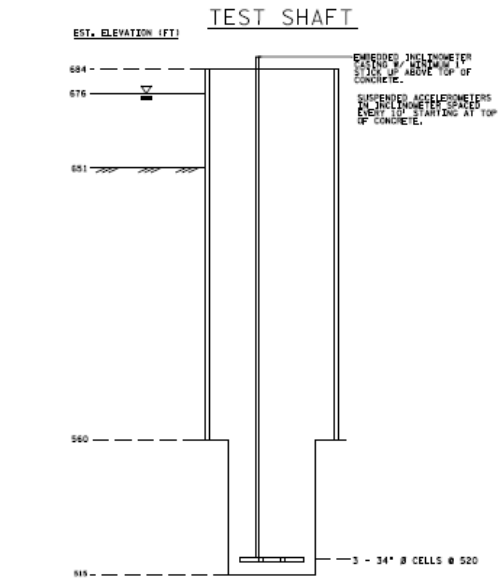
FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

STATE PROJ. NO.	CHARGE IDENTIFIER
8217-18	

STATE PROJ. NO. 8217-18 (T.H. 36 = 045) SHEET NO. 1 OF 10 SHEETS

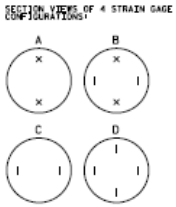
96 inch Shaft





LEGEND

|	AXIAL (O-CELLS) STRAIN GAGES
×	LATERAL (STATNAMIC) STRAIN GAGES



ELEVATION FT AGL	INSTRUMENTATION SECTION
604	A
596	A
588	B
580	A
576	C
572	A
564	C
558	C
552	C
546	C
540	D
534	D
528	D

DRILLED SHAFT SEQUENCE:

1) PLACE PERMANENT CASING TO PRACTICAL REFUSAL WITH APPROPRIATELY SIZED VIBRO-HAMMER. PRACTICAL REFUSAL ANTICIPATED TO BE AT APPROXIMATELY EL. 560'.

2) ONCE DRILLING PROCEDURE STARTS IN THE ROCK, THE CONTRACTOR IS TO PROCEED THROUGH STEPS 3 - 8 ON A CONTINUOUS WORK DAY PROCESS 8 - 10 HOURS/DAY WITH OUT ANY DELAY OR STOP. STEPS 3 - 8 MUST BE PERFORMED ON A CONTINUOUS BASIS TO SIMULATE PRODUCTION SHAFT INSTALLATION AND TIMING.

3) EXCAVATE THE SHAFT AND SOCKET UNDER POLYMER SLURRY.
   A) CLEAN THE SHAFT EXCAVATION BASE USING AIR-LIFT OR HYDRAULIC PUMP.
   B) EXCHANGE THE FULL VOLUME OF USED SLURRY WITH FRESH SLURRY FROM TIME OF REACHING TIP ELEVATION TO THE TIME OF SETTING THE REBAR CAGE.

4) INSPECT THE BASE OF THE SOCKET WITH MINI-SID
   A) IF APPRECIABLY AMOUNT OF SEDIMENT / DEBRIS EXIST AT THE BASE, AS DETERMINED BY THE ENGINEER, AIR-LIFT OR HYDRAULIC PUMP CLEAN THE BASE, RE-INSPECT WITH MINI-SID.

5) PERFORM IN-SITU DIAMETER MEASUREMENT W/ SONIC-CALIPERS.

6) PLACE 3" TO 6" OF GRAVEL SURFACE. SPREAD THE GRAVEL EVENLY MAINTAINING AN EQUAL THICKNESS THROUGH OUT THE BASE.

7) SET THE CAGE.

8) TREMIE-PLACE CONCRETE.

9) PERFORM CROSSHOLE SONIC LOGGING (CSL) TEST.

10) BASE GROUT.

11) PERFORM AXIAL O-CELL TEST, AS DIRECTED BY THE ENGINEER.

12) PERFORM LATERAL STATNAMIC TEST AS DIRECTED BY THE ENGINEER. TESTING EQUIPMENT SHALL BE CAPABLE OF DELIVERING 300 TONS OF HORIZONTAL LOAD TO THE SHAFT.

13) IN LIEU OF A REFERENCE BEAM, A SURVEY MONUMENT SHALL BE ATTACHED TO THE EXTERIOR OF THE PERMANENT CASING ABOVE THE WATER LEVEL AND SHALL BE MEASURED BEFORE AND AFTER THE LATERAL TEST. X, Y, Z MEASUREMENTS SHALL BE PERFORMED AND CAPABLE OF ACCURACY TO THE NEAREST 0.1-INCH.

NOTE:

- 4 DISPLACEMENT TRANSDUCERS AT O-CELL LEVEL TO MEASURE PLATE SEPARATION.
- TELL TALE ARRANGEMENT PER TESTING SPECIALIST RECOMMENDED.

DRILLED SHAFT TEST

DETAILS: O-CELL & STRAIN GAGES (SITE A)

DRAWN BY: JL | CHECKED BY: DS | CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER | LIC. NO. 49048 DATE __/__/11 | STATE PROJ. NO. 8217-18 (T.H. 36) | SHEET NO. 7 OF 10 SHEETS

Page 10 of 10 sheets: SWPPP

STORM WATER POLLUTION PREVENTION PLAN NARRATIVE
CONSTRUCTION ACTIVITY REQUIREMENTS

PROJECT DESCRIPTION/LOCATION

THE SCOPING OF WORK IS TO CONSTRUCT A DRILLED SHAFT AND A PILE TEST PROGRAM LOCATED IN THE ST CROIX RIVER, SOUTH OF STILLWATER AT TWO LOCATIONS MEASURING APPROXIMATELY 0.11 AC OF IMPACT, IN SECTION 34, T30N, R20W, WASHINGTON COUNTY, MN & ST. CROIX COUNTY, WI. THE STATE PROJECT NUMBER IS 8217-18.

THE POTENTIAL POLLUTANTS GENERATED FROM THIS CONSTRUCTION PROJECT INCLUDE RIVER SEDIMENTS, REFUELING OPERATIONS, EQUIPMENT FLUIDS, CONCRETE MIXTURES, POLYMER SLURRIES, MINERAL SLURRIES WITH SODIUM BENTONITE OR ATTAPULGITE AND TRASH. ADDITIONAL IMPACTS COULD OCCUR AT THE POINTS OF ENTRY AND EXIT FROM THE RIVER, BUT ARE EXPECTED TO USE EXISTING ACCESS FACILITIES.

THE SITE MAP IS SHOWN IN THE PLAN, WITH THE ONLY FLOW TO THE SOUTH.

ENVRIONMENTALLY SENSITIVE AREAS
ST CROIX RIVER IS A DESIGNATED SCENIC AND RECREATIONAL, AND IMPAIRED FOR AQUATIC CONSUMPTION FOR PCB AND HG. THERE ARE NO ADDITIONAL SPECIAL OR TROUT STREAM LISTED WATERS WITHIN 1 MILE OF THE IN-RIVER WORK.

THERE ARE NO LAND FEATURE CHANGES, NOR CHANGE IN PERVIOUS OR NON-PERVIOUS SURFACE AREA. THERE ARE NO LONG TERM MAINTENANCE AFTER PILE TEST CONSTRUCTION HAS BEEN COMPLETED.

PROJECT CONTACTS
THE PROJECT ENGINEER AND CONTRACTOR ARE RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP AND INSTALLATION, INSPECTION AND MAINTENANCE OF THE EROSION, SEDIMENT, AND CHEMICAL CONTROL PREVENTION BMPS BEFORE AND DURING CONSTRUCTION. THE PROJECT ENGINEER AND CONTRACTOR ARE RESPONSIBLE FOR UPGRADING AND AMENDING THE SWPPP BASED ON FIELD CONDTIONS AND CONTRACTOR OPERATIONS. MN/DOT METRO DISTRICT STAFF AND MEMBERS OF ENVRIONMENTAL SERVICES ARE ALSO AVAILABLE FOR ASSISTANCE.

MNDOT PROJECT ENGINEER
CONTACTOR EROSION CONTROL SUPERVISOR
STATE DUTY OFFICER 651-646-5451/800-422-0798
MPCA: SHAWN NELSON 651-757-2604
SWPPP DESIGN: DWAYNE STENLUND 612-810-9409
DNR TRANSPORTATION HYDROLOGIST: PETER LEETE 651-366-3634
USACE: DAN SEEMON 651-290-5380
COAST GUARD: ERIC WASHBURN 314-269-2379

1. THE CONTRACTOR WILL NEED TO IDENTIFY A MN/DOT CERTIFIED EROSION CONTROL SUPERVISOR IN GOOD STANDING WHO WILL BE KNOWLEDGEABLE AND EXPERIENCE IN THE APPLICATION OF EROSION, SEDIMENT AND CHEMICAL MANAGEMENT BEST MANAGEMENT PRACTICES. THE EROSION CONTROL SUPERVISOR WILL BE REPSONSIBLE FOR DEVELOPING AND IMPLEMENTING A QUALITY ASSURANCE PROGRAM FOR ALL CHEMICAL MANGEMENT PROCESSES TO ENSURE PROPER OPERATION AND MANTENANCE.

2. THE EROSION CONTROL SUPERVISOR WILL WORK WITH THE PROJECT ENGINEER TO OVERSEE THE IMPLEMENTATION OF SWPPP, AND QUALITY CONTROL PROGRAM, AND THE INSTALLATION, INSPECTION AND MAINTENANCE OF THE BEST MANAGEMENT PRACTICES.

3. THE CONTRACTOR IS RESPONSIBLE FOR IMPLENTATION ALL NECESSARY STATE FEDERAL ENVIRONMENTAL REGULATIONS AND WILL PERFORM THESE TASKS THROUGH THE SPECIAL PROVISIONS SITE PLAN PROCESS. THE CONTRATOR IS REMINDED OF THE RESPONSIBILTY TO READ AND UNDERSTAND THE DNR AND USACE PERMITS.

4. THE CONTRACTOR WILL DEVELOP A CHAIN OF COMMAND WITH ALL OPERATORS ON THE SITE TO ENSURE THE SWPPP WILL BE IMPLEMENTED AND STATE IN EFFECT UNTIL THE CONSTRUCTION PROJECT IS COMPLETE, AND ALL DISTURBED AREAS ARE RESTORED TO ORIGINAL OR PERMIT APPROVED CONDITION. IF A NOTICE OF TERMINATION IS REQUIRED, IT SHALL BE SUBMITTED TO THE MPCA.

5. THE CONTRACTOR WILL PREPARE A WRITTEN WEEKLY SCHEDULE OF PROPOSED SEDIMENT AND CHEMICAL GENERATING ACTIVITY PROTECTION MEASURES FOR THE ENGINEERS APPROVAL.

6. THE CONTRACTOR WILL SUBMIT A SITE PLAN AS DESCRIBED IN 1717 AND THE SPECIAL PROVISIONS, AND AT ANY TIME REQUESTED BY THE ENGINEER. THE CONTRACTOR SHALL ALLOW FOR 24 HOURS OF REVIEW, BUT MAY BE EXPIDITED DUE TO CRITICAL OPERATIONS AND CONDITIONS USING TEAM WORK QUALITY ASSURANCE PROGRAM IDENTIFIED AT THE PRECONSTRUCTION MEETING.

7. ALL SEDIMENT AND CHEMICAL MANAGEMENT BEST PRACITCES SHALL BE INPLACE PRIOR TO ANY WORK THAT GENERATES THE POTENTIAL FOR POLLUTION TO THE RECEIVING WATERS.

8. ALL EXPOSED SOILS CAUSED BY CONTRACTOR OPERATIONS AT THE LOADING AND UNLOADING LAND ACCESS AREAS SHALL BE RESTORED TO ORIGINAL CONDITION WITHIN 24 HOURS OF DISTURBANCE UNLESS PART OF A PROJECT ENGINEER APPROVED SITE PLAN DETAILING THE BEST MANAGEMENT PRACTICES THAT WILL BE USED IN THE INTRERUM. NO EXPOSED SOILS WILL BE PERMITED OVER WINTER.

9. PERIMETER CONTROL MUST BE ADDEQUATE TO CONTAIN ALL DREDGE MATERIALS BOTH ON LAND AND ON BARGE. STABILIZATION OF DREGE MATERIALS SHALL BE PERFORMED AS NECESSARY TO PREVENT DISCHARGE BY AIR OR BY WEATHER TO WATERS OF THE STATE BY PLASIC OR GEOTEXTILE COVERS, OR AS APPROVED BY THE PROJECT ENGINEER. ALL COSTS ASSOCIATED WITH DREDGE STABILIZATION SHALL BE BORNE BY THE CONTRACTOR.

10. STREET SWEEPING SHALL BE REQUIRED IF SEDIMENTS ARE GENEATED AT POINTS OF ACCESS TO RIVER. BARGE SWEEPING/CLEANING SHALL PERFORMED AS OFTEN AS NECESSARY TO KEEP WORK SURFACE FREE OF THE POTENTIAL TO DISCHARGE TO THE RIVER. ALL COSTS TO KEEP ACCESS AND BARGE SURFACES CLEAN OF CHEMICAL SPILLS AND SEDIMENTS SHALL BE BORNE BY THE CONTRACTOR.

11. THE CONTRACTOR WILL COMPLY WITH THE REQUIREMENTS REGARDING POLLUTION PREVENTION MANAGEMENT DURING CONSTRUCTION, WHICH WILL INCLUDE BY THE SITE PLAN PROCESS, BUT NOT LIMITED TO
    A. CONCRETE WASHOUT, WASHOFF, MIXING, BATCHING, GRINDING SAWING, REMOVING, AND DISPOSAL
    B. SOLID WASTE COLLECTION AND REMOVAL
    C. SECONDARY CONTAINMEMT
    D. HAZARDOUS WASTE STORAGE CONTAINERS AND SPILL KITS
    E. REFUELING
    F. FUGITIVE DUST CONTROL
    G. DEWATERING

12. THE EROSION CONTROL SUPERVISOR WILL INSPECT THE ENTIRE OPERATION DAILY AS PART OF THE QUALITY ASSURANCE PROGRAM. ALL INSPECTIONS, MAINTENANCE, AND AMENDMENTS MUST BE RECORDED IN WRITING AND THESE RECORDS MUST BE RETAINED WITH THE SWPPP. RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY SHALL AT THE MINUMUM INCLUDE:
    A. DATE AND TIME OF INSPECTION
    B. NAME OF PERSON CONDUCTING INSPECTIONS
    C. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS
    D. CORRECTIVE ACTIONS TAKEN INCLUDING DATE AND TIME, AND PARTY COMPLETING THE CORRECTIVE ACTION OR COMPLETING MAINTENANCE ACTIVITYS
    E. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 IN 24 HOURS
    F. DOCUMENTS AND CHANGES MADE TO THE SWPPP.

13. THE CONTRACTOR SHALL PREVENT THE SPEAD OF AQUATIC AND NOXIOUS ORGANISMS USING BEST MANAGEMENT PRACTICES DEVELOPED BY STATE AND FEDERAL AGENCIES, AND MNDOT 1717 SITE PLANNING BY VISUAL INSPECTION PROCESS FOR ALL EQUIPMENT IN CONTACT WITH RIVER BANKS, SURFACE WATERS, AND RIVER BOTTOM SOILS.

14. THE CONTRACTOR SHALL PREVENT DAMAGE TO DNR & US FISH AND WILDLIFE SERVICE DEFINED AQUATIC MUSSEL HABITAT BY CHANGING AND MODIFYING CONSTRUCTION PRACTICES ONCE DAMAGE IS OBSERVED.

15. THE CONTRACTOR SHALL SUBMIT A DREDGE DISPOSAL PLAN FOR THE PROJECT ENGINEER'S APPROVAL

16. THE CONTACTOR IS REMINDED THAT ADDITIONAL INFORMATION FOR SWPPP GUIDANCE AND IMPLEMETNATION IS LOCATED IN SPECIAL PROVISIONS AND INCLUDES THE FOLLOWING ITEMS:
    A. EMERALD ASH BORER COMPLIANCE
    B. CULTURAL RESOURCE ISSUES
    C. PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE
    D. CONTAMINATION MATERIALS
    E. SITE PLAN
    F. BARGE DECONTAMINATION PROTOCOL
    G. DEWATERING PROTOCOL

17. THE CONTRACTOR IS RESPONSIBLE FOR A DISPOSAL PLAN OF THE DREDGE MATERIAL. THE PLAN WILL INCLUDE HOW THE MATERIAL WILL BE DISPOSED AND LOCATION OF DISPOSAL SITE. THE CONTRACTOR MAY NEED TO AMEND THE SWPPP SHOULD THE DISPOSAL MATERIAL BE GREATER THAN OR EQUAL TO 1 ACRE INCLUDING OTHER LAND DISTURBANCE (HAUL ROADS, STAGING AREA, ETC). AT THAT THRESHOLD, THE CONTRACTOR WILL ALSO APPLY FOR A MPCA CONSTRUCTION NPDES PERMIT AND PAY ALL APPLICATION FEES ASSOCIATED WITH THE PERMIT

DRAFT DRAFT DRAFT
DRAFT DRAFT DRAFT

I HEREBY CERTIFY THAT THIS PLAN SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
DATE [illegible] REG. NO. [illegible] ENGINEER [illegible]

STORM WATER POLLUTION PREVENTION PLAN

BMP decontamination protocols

- It must be inspected, and documented as inspected as clean
- If plants, mud, soil, debris, etc is observed, it must be powerwashed prior to entry of the rivershed
- Must be allowed to dry for 7 days prior to use unless high temperature was used.

Inspected & Verified Everything

- Portable barges, spuds
- Timber pads
- Containment boom
- Cranes, trucks, dumpsters
- Piles
- Work & hopper barges
- Drills, rigging
- Hammers, pile drivers
- Shafts, H-pile, round pile
- Rock


BOLANDER

Cleaning

Goal of Drill & Test Pile Operations

(identical to all pre, during and post bridge construction activities)

- It never enters the river system
  - Arrives clean, stays clean, leaves clean
- Deploy the Las Vegas System: **What happens on the barge, stays on the barge. What happens on land, does not stay.**
  - Primary, secondary and tertiary containment systems
  - Tethered equipment
  - Daily cleaning of surfaces
  - Trash control
  - Lockdown/lockout of chemicals

Las Vegas Management System

Environment/SWQ Special Provision

notify personnel.

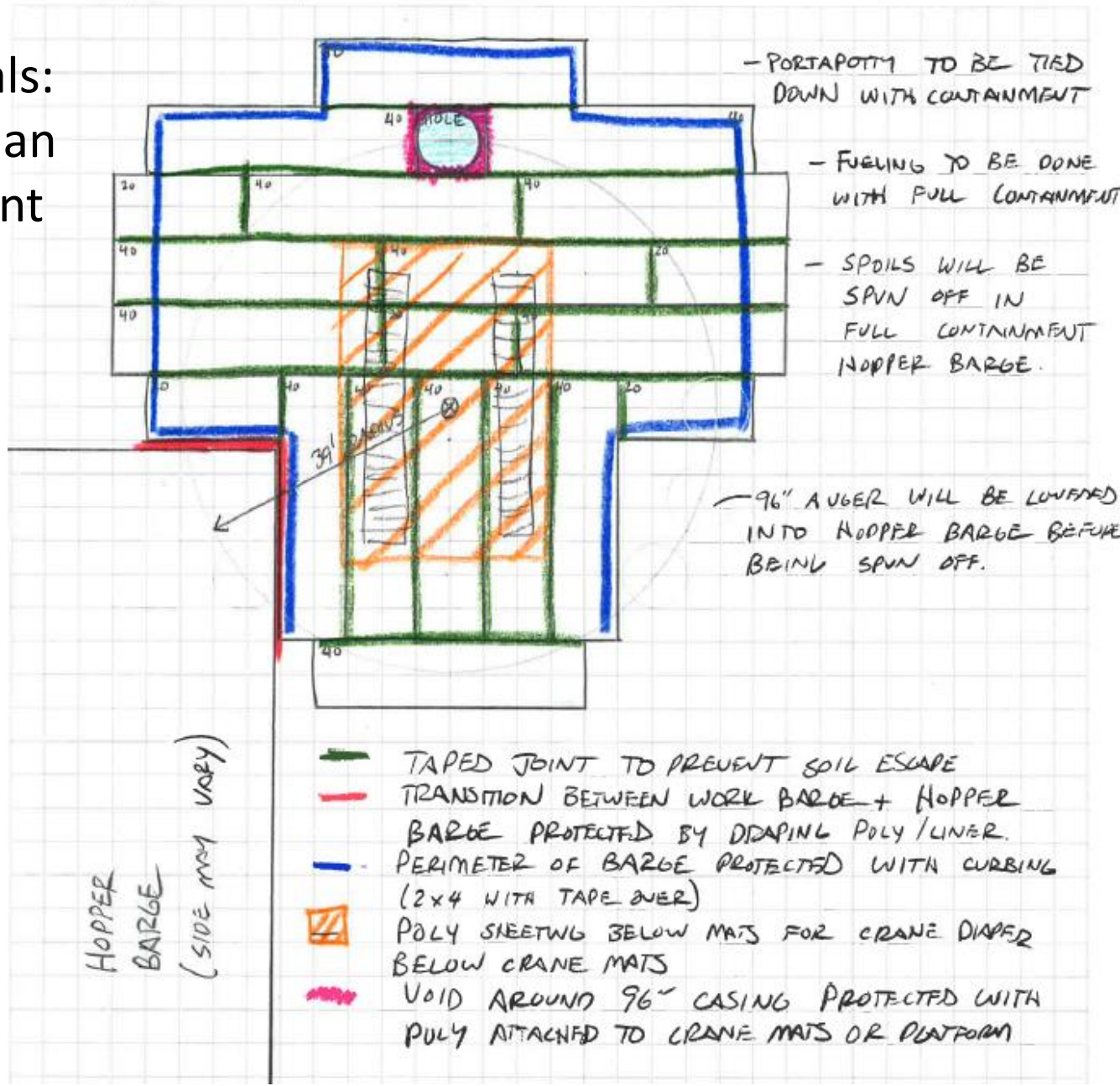
S-29.3 MnDOT 1717.2E is hereby deleted and replaced with the following:

E Site Plans

The Engineer may require the Contractor to submit a site plan, in writing, detailing proposed erosion control and sediment control measures and a schedule indicating starting and completion times for construction operations working in water bodies and/or in direct proximity to waters of the state.

Contractor shall not start work in the affected areas until the schedule and site plan have been accepted by the Engineer and all materials and equipment for the activity are on site.

Contractor Submittals:
Site Management Plan
= SWPPP Amendment
Process Program
Delivery



Monitoring

- Daily work area review
  - Note in diary
- Water sample collection
- Upstream and downstream monitoring

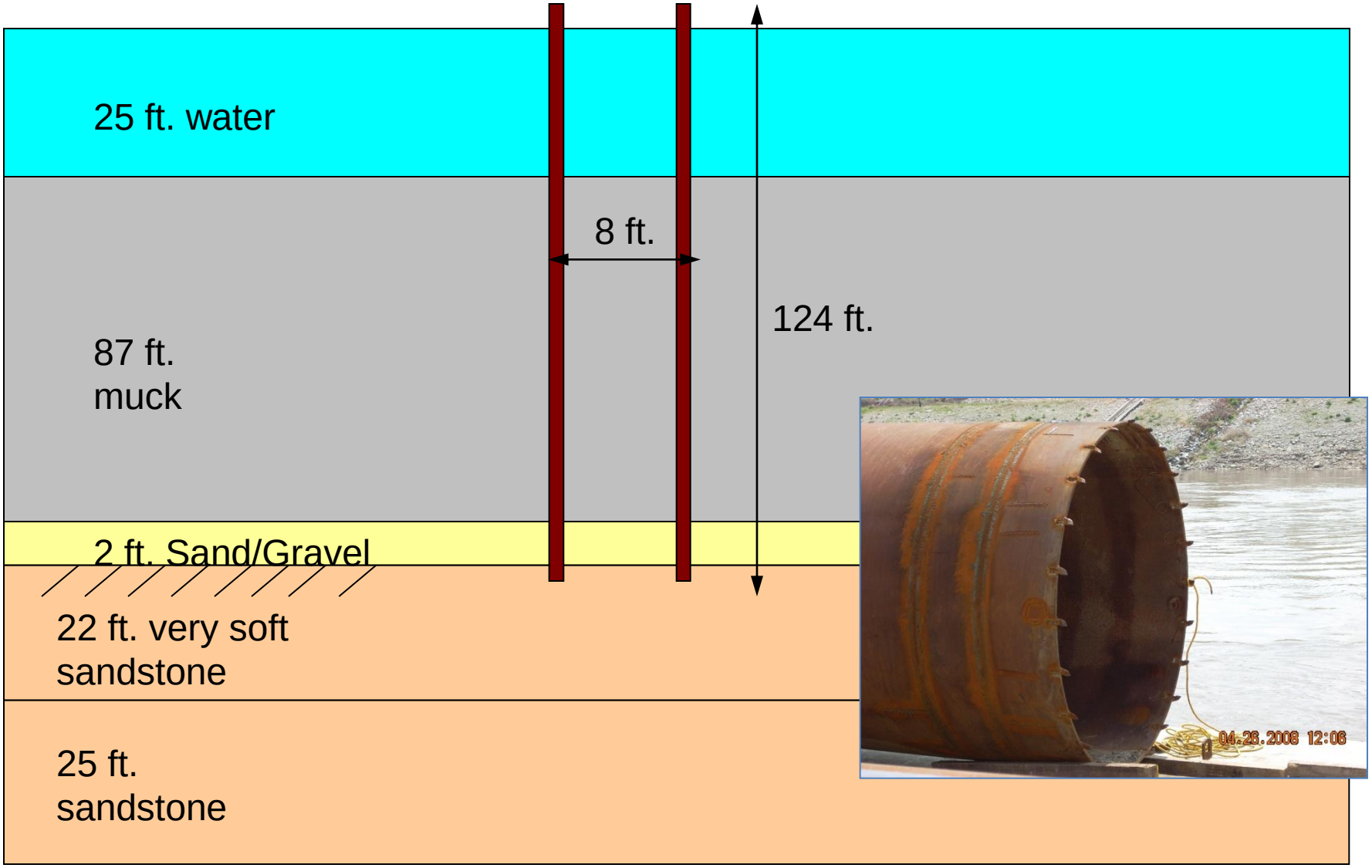

Many containment systems


WWW. POSEIDONBA
WWW. POSEIDONBARGE .COM
DANGER

Tethering

Shaft drill bits

Install Steel Casing



Paul Kivisto, St. Croix River Bridge Construction Engineer


BEAUPRE
Link-Belt
115
100
105
100


JLG LIFT
BEAUPRE
Link-Belt

Hopper Barge Drill Mud Containment

Air Lifting of Shaft Slurries

Delivering Concrete


BUILD WITH
CEMSTONE
READY-MIX

Install steel reinforcement

25 ft. water

87 ft.
muck

169 ft.

2 ft. Sand/Gravel

22 ft. very soft
sandstone

sandstone

Load test
jack

Paul Kivisto, St. Croix River Bridge Construction Engineer

Actual Testing

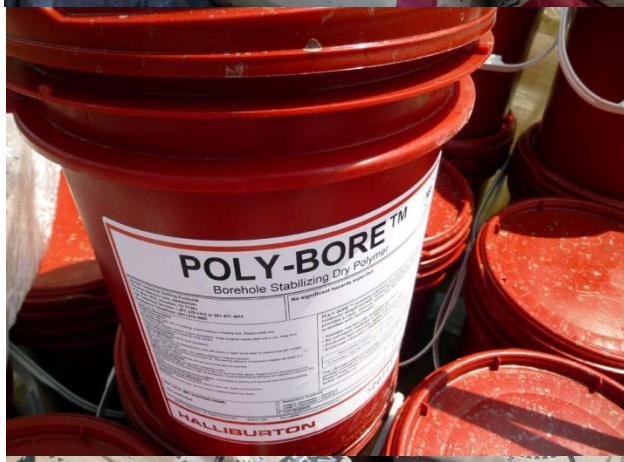
Final Decontamination Protocol


WWW.
POSEIDONBARGE
.COM
99-BARGE


Water Quality Monitoring

600,000 gallons plus of

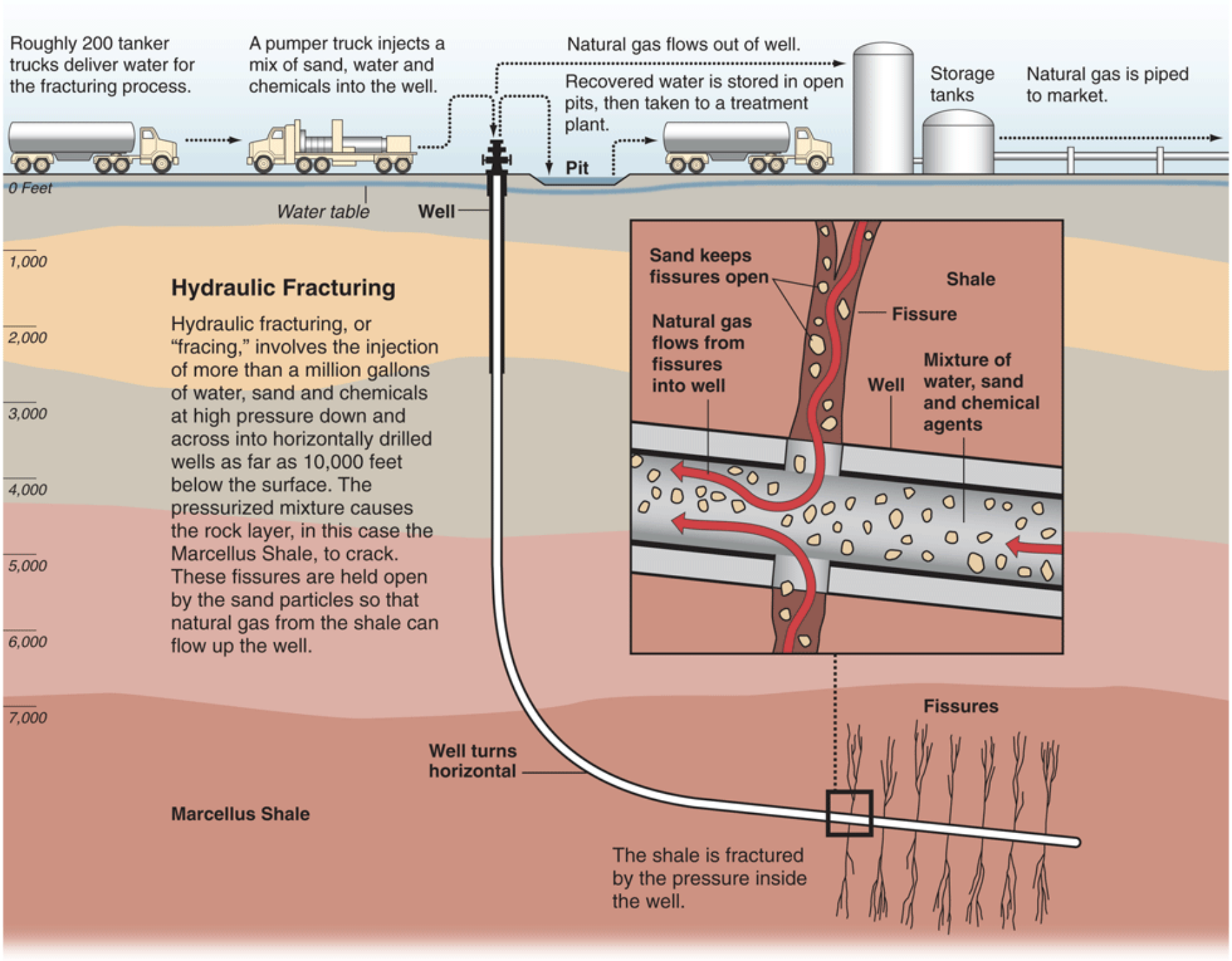
- River sediments
- Polyacrylamide dispersant
- Bentonite and other chemicals
- Concrete tremie fluids
- River water



Hydraulic Fracturing BMPs

- Perimeter Control
- Dust Control
- Good Housekeeping
- Water management
- Spill management
- Waste management
- Documentation
- Disposal plan
- Temporary Site stabilization
- Final site restoration and stabilization


Major Shale Gas Exploration Areas In the United States
Montana Thrust Belt
Williston Basin
Cody
Gammon
Hilliard-Baxter-Mancos
Greater Green River Basin
Uinta Basin
Piceance Basin
Mancos
Hermosa
Paradox Basin
Lewis
San Juan Basin
Pierre
Raton Basin
Excello-Mulky
Cherokee Platform
Woodford
Anadarko Basin
Ardmore Basin
Palo Duro Basin
Bend
Arkoma Basin
Fayetteville
Forest City Basin
Michigan Basin
Antrim
Illinois Basin
New Albany
Appalachian Basin
Devonian (Ohio)
Marcellus
Utica
Chattanooga
Black Warrior Basin
Conasauga
Floyd-Neal
Valley and Ridge Province
Barnett
Ft. Worth Basin
Permian Basin
Texas-Louisiana-Mississippi Salt Basin
Haynesville-Bossier
Barnett-Woodford
Marfa Basin
Maverick Sub-Basin
Pearsall-Eagle Ford
Eagle Ford
Rio Grande Embayment
Miles
0 100 200 300 400
N
Shale Gas Plays
Basins
Stacked Plays
Shallowest / Youngest
Deepest / Oldest



Graphic by Al Granberg


WILDLIFE MITIGATION
NETTING
WARNING
DO NOT REMOVE,
DAMAGE,
OR ALTER NETTING
CALL (970) 260-3650 FOR ASSISTANCE

Need final disposal manifest

Final disposal Plan

Minnesota/Wisconsin Connection

THE ICKINESS AND STICKINESS

FRACKIN

By GREG BREINING

Which has done more in the last five years to cut America's greenhouse-gas emissions and slow the pac warming?

1) Development of renewable energy such as wind and solar.
2) Increasing the fuel efficiency of vehicles, especially through hybrid technology.
3) Fracking.

THE GOOD

The practice is transforming the e industry, with less reliance on coa

THE BAD

Local environmental battles. Plus, cheap fossil fuel is like a high-rate card — tough to pay off when you come to rely on it.

You see where this is headed.

The equation of national energy use can be tough to parse. As energy consultant Geoffrey Styles says, it has many "moving parts."

But you can make a reasonable argument that fracking, or hydraulic fracturing — the recently developed process of springing gas and oil from previously impenet formations — has done more than any other policy or technology in the last few years (except, perhaps, sastrous recession) to slow the production of greenhouse gases.

How? By producing abundant, cheap natural gas. That gas has replaced a lot of coal in generating electr releasing only half the carbon dioxide.

Breining continues: It may be only a bridge to better ways — but we need that bridge. **OP4** ►

Greg Breining writes about science, nature and travel. He is the author of "Paddle North: Canoeing the Boundary Waters-Quetico Wilderne Shore: Exploring Lake Superior by Kayak."

STARTRIBUNE 12/01/12

BRUCE BISPING • bbisping@startribune.com

Mike Caron, director of land use affairs for Tiller Corp., recently gave a tour of the old Scandia, Minn., gravel mine site. Tiller wants to upgrade the long-dormant site and mine its bedrock deposits.

"It's sitting right next to the national park. That's a terrible place to start a big mining operation."

Bill Clapp, a seasonal Scandia resident and St. Croix River Association board member

"We feel it's a project that can move forward. We've tried to address all concerns."

Mike Caron, Tiller Corp.'s land use manager

St. Croix River city faces decision on old mine site

• Tiller Corp. said it will reclaim the Scandia mine area and make it profitable, but opponents fear it will mean noise, dust, heavy truck traffic — and a falloff in tourism.

By KEVIN GILES • kgiles@startribune.com

On the bluffs above the St. Croix River, near the first Swedish settlement in Minnesota, a battle of wills is raging over efforts to excavate more than 1 million tons of sand and gravel from an old mine.

To the Maple Grove company seeking permits for the work, Tiller Corp., the site represents a gift of bedrock deposits that can be hauled away to make concrete, asphalt and other construction materials.

To many conservationists and Scandia residents, the 64-acre mine would disrupt the tranquility of the nearby St. Croix National Scenic Riverway, a national park, and their Washington County city of 4,000 people.

The issue goes to Scandia's planning commission Tuesday for a high-stakes decision on a conditional use permit that Tiller needs to proceed.

The permit doesn't seek to extract the more profitable and controversial ultra-fine "fracking" sand used in oil drilling. But given the surge of mining activity in the St. Croix basin, many Scandia residents want more scrutiny of

Mine continues on B5 ►

READ MORE Documents and maps of the Tiller proposal can be found on the City of Scandia website at www.startribune.com/a1928.


170
Downing
Boyceville
Proposed Mine Location
79
79
128
Q
Wilson
Knapp
12
12
Proposed
Rail Spur
79
PROPOSED TRUCK ROUTE
Proposed Mine Site
Proposed Rail Spur
Proposed Truck Route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WE TRUST
006


2012-06-15
Preferred, LaG., Bloomer,
Chippewa County


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Muddy Water

Comments (2)

Dam bursts at frac sand mine, sends runoff into St. Croix River

A hiker discovered a stream flowing into the St. Croix River was being polluted by sand which escaped from a mine near Grantsburg, Wisconsin.

By Greg Seitz – Wednesday, May. 16, 2012

Update 5/20: *This story has now been covered by Minnesota Public Radio and the St. Paul Pioneer Press, as well as published broadly via the Associated Press. Scroll to the bottom for links to those stories and new photos provided by the Wisconsin Department of Natural Resources.*

The wall of a waste pond at a sand mine near Grantsburg burst in April, sending fine sediment flowing down a stream and into the St. Croix River. The *Country Messenger* newspaper reports:

> ...Tiller Corporation was unaware that the

Featured

Good Neighbors: Scandia and the St. Croix
An up-close report on the gravel mine proposal next to the river as the city prepares to decide its fate.

The biggest St. Croix River stories of 2012
The most popular stories on St. Croix 360 this year ran the spectrum from mining to wildlife photos, history to fish.

Enjoy winter at St. Croix River country's state parks
Events include candlelight skiing, full moon snowshoeing, snowmobile safety, and opportunities to get the kids out of the house.

Recent Comments

Siambeck: "I smell a rat, and it's not a




Questions


DO NOT LITTER
NOTICE
No eating or drinking
NO HAND FUELING
NO HAZARDOUS WASTE DUMPING